

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

- 1 1. For use in optical fiber connector apparatus an optical fiber containing
2 member comprising:
 - 3 an elongated ferrule member having a longitudinal bore extending from a front
4 end thereof toward the rear end thereof; and
 - 5 a clamping member within said bore for bearing against the optical fiber for fixing
6 it in place;
 - 7 the material of said clamping member comprising a shaped memory alloy (SMA).
- 1 2. The optical fiber containing member as claimed in claim 1 wherein the
2 shaped memory alloy material is an NTA alloy.
- 1 3. The optical fiber containing member as claimed in claim 2 wherein said
2 NT alloy is a Ti Ni alloy.
- 1 4. The optical fiber containing member as claimed in claim 1 wherein said
2 clamping member has a primary configuration and can be stressed to a secondary or
3 deformed configuration different from said primary configuration.
- 1 5. The optical fiber containing member as claimed in claim 4 wherein said
2 clamping member comprises a sleeve contained within said longitudinal bore, said sleeve
3 having an axial bore therein having a diameter in the primary configuration less than the
4 diameter of the fiber.
- 1 6. The optical fiber containing member as claimed in claim 4 wherein said
2 axial bore has a diameter in the secondary configuration greater than the diameter of the
3 fiber.

1 7. The optical fiber containing member as claimed in claim 1 wherein said
2 longitudinal bore has first and second approximately diametrically opposed hollow lobes
3 extending along at least a portion of its length, and a at least one of said clamping
4 members within said bore.

1 8. The optical fiber containing member as claimed in claim 7 wherein said
2 one clamping member has a V-shaped configuration in the secondary configuration.

1 9. The optical fiber containing member as claimed in claim 7 wherein said
2 one clamping member has a planar strip primary configuration and bears against a fiber in
3 said longitudinal bore to clamp it in place therein.

1 10. The optical fiber containing member as claimed in claim 9 wherein the
2 side edges of said planar strip configuration are within said lobes.

1 11. The optical fiber containing member as claimed in claim 8 and further
2 having a second clamping member within said bore having a V-shaped secondary
3 configuration with the open end of the V-shaped being opposite the open end of said one
4 V-shaped clamping member.

1 12. The optical fiber containing member as claimed in claim 11 wherein said
2 one and said second clamping members each has a planar strip primary configuration
3 wherein each of said clamping members bears against a fiber in said longitudinal bore to
4 clamp it in place therein.

1 13. The optical fiber containing member as claimed in claim 12 wherein the
2 side edges of each of said planar strip configuration clamping members are within said
3 lobes.

1 14. A method of securing an optical fiber within a fiber containing member
2 having a longitudinal bore for containing the fiber, said method comprising
3 fabricating a first clamping member of shape memory alloy in a primary
4 configuration;
5 applying deforming stress to said first member to deform it to a secondary
6 deformed configuration;
7 inserting said deformed member in said longitudinal bore;
8 inserting the fiber in said longitudinal bore; and
9 treating said deformed member to return it to its primary configuration whereby it
10 applies clamping force to the fiber.

1 15. The method as claimed in claim 14 wherein said first clamping member,
2 in its primary configuration, is a sleeve member having an axial bore therein, said axial
3 bore having a diameter less than the diameter of the fiber.

1 16. The method as claimed in claim 15 wherein the axial bore in said first
2 sleeve member in its deformed configuration has an enlarged diameter larger than the
3 diameter of the fiber.
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4 17. The method as claimed in claim 16 and further including the step of
5 affixing said first sleeve member in its secondary configuration within the longitudinal
6 bore.

1 18. The method as claimed in claim 17 and further including the step of
2 inserting the fiber into the enlarged diametric axial bore.

1 19. The method as claimed in claim 18 wherein the step of treating said first
2 deformed member to return it to the primary configuration comprises applying heat
3 thereto.

1 20. The method as claimed in claim 14 wherein said first clamping member is
2 formed into a planar strip in its primary configuration.

1 21. The method as claimed in claim 20 wherein the step of deforming said
2 strip to a secondary configuration comprises imparting a V-shape thereto and inserting it
3 into the longitudinal bore.

1 22. The method as claimed in claim 21 wherein the step of treating said first
2 deformed member to return it to the primary configuration comprises applying heat
3 thereto.

1 23. The method as claimed in claim 21 and further including the step of
2 creating a second deformed planar strip having a V-shaped configuration and inserting it
3 into said longitudinal bore with its open end of the V facing the open end of said first
4 deformed member.

1 24. The method as claimed in claim 23 wherein the fiber is inserted into said
2 longitudinal bore between the open ends of the V-shapes of the first and second clamping
3 members.

1 25. The method as claimed in claim 24 and including the step of heating both
2 said first and second V-shaped members to return them to their primary configuration
3 with the fiber clamped therebetween.